ABSTRACT OF THE DISCLOSURE

A matrix reordering method performs reordering of elements of a coefficient matrix created based on coefficients of linear simultaneous equations whose solutions are to be produced by parallel processing of processors of a computer in accordance with Gaussian elimination. Herein, degrees corresponding to numbers of non-zero elements are calculated with respect to all pivots included in the coefficient matrix. Then, a first pivot whose degree is under a threshold (mindeg+ α) is selected from among the pivots of the coefficient matrix, while a second pivot whose critical path length is minimum is also selected from among the pivots of the coefficient matrix. Replacement of elements is performed between the first pivot and second pivot to complete reordering with respect to the first pivot. In addition, non-zero elements, which are newly produced by the Gaussian elimination of the first pivot, are added to the coefficient matrix. If a degree or a parameter of the first pivot is under a threshold (β), reordering is performed on a partial matrix whose elements are not eliminated and are selected from among the elements of the coefficient matrix in accordance with the nested dissection method, so that non-zero elements, which are newly produced by the Gaussian elimination of the partial matrix, are added to the coefficient matrix. Because the critical path length can be reduced as compared with conventional techniques, it is possible to considerably reduce a total processing time of the parallel processing to secure high-speed performance of the Gaussian elimination.